

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/12

Date Received: 08/16/12

Project: X-Ray Self Monitor M09384, F&BI 208231

Date Extracted: NA

Date Analyzed: 08/28/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH  
USING EPA METHOD 9040C

Sample ID  
Laboratory ID

pH

M09384  
208231-01

1.96 ht

\* Due to the low pH of this sample, the result provided by this test method may be an estimate.

8/31/12 Sample  
WAS Preserved  
causing pH to  
be low. Near  
Sample given

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Total Metals By EPA Method 200.8

Client ID:	M09384	Client:	Alaskan Copper Works
Date Received:	08/16/12	Project:	X-Ray Self Monitor M09384
Date Extracted:	08/16/12	Lab ID:	208231-01 100x
Date Analyzed:	08/23/12	Data File:	208231-01 100x.020
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	87	60	125
Indium	81	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	243
Silver	233

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	X-Ray Self Monitor M09384
Date Extracted:	08/16/12	Lab ID:	I2-539 mb
Date Analyzed:	08/23/12	Data File:	I2-539 mb.019
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	94	60	125
Indium	91	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Silver	<1

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**QUALITY ASSURANCE RESULTS  
FROM THE ANALYSIS OF WATER SAMPLES  
FOR pH BY METHOD 9040C**

Laboratory Code: 208231-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	1.96	1.97	1	0-20

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Date Received: 08/16/12

Project: X-Ray Self Monitor M09384, F&BI 208231

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 208209-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	ug/L (ppb)	20	2.02	99	101	71-130	2
Silver	ug/L (ppb)	5	<1	99	102	73-114	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	99	80-119
Silver	ug/L (ppb)	5	106	85-116

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### Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

ML 08-16-12 AT 4

**FORWARDING TIME**

☐ Standard *19:00*  
☐ Express *19:00*

Extra charges indicated by:

**EXTRA CHARGES**

☐ Customs office on days

☐ Insurance charges

☐ Weight and volume restrictions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by GC/MS	VOCs by GC/MS	SPEC by GC/MS	HPVS	Notes
M05384	01	8/6/12	1:30	H2O	1							

PROB NAME	COMPANY	DATE	TIME
Guano Thompson	ACU	8/16/12	2:30pm
HONG NGUYEN	FBI	2	✓

Sample received at 29 °C

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Bradley T. Benson, B.S.  
Kurt Johnson, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
TEL: (206) 285-8282  
e-mail: fbi@isomedia.com

August 30, 2012

Gerald Thompson, Project Manager  
Alaskan Copper Works  
628 South Hanford  
Seattle, WA 98134

Dear Mr. Thompson:

Included are the additional results from the testing of material submitted on August 16, 2012 from the X-Ray Self Monitor M09384, F&BI 208231 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
ACU0830R.DOC



**FRIEDMAN & BRUYA, INC.**

**ENVIRONMENTAL CHEMISTS**

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August 30, 2012

**INVOICE #12ACU0830-1**

Accounts Payable  
Alaskan Copper Works  
628 South Hanford  
Seattle, WA 98134

RE: Project X-Ray Self Monitor M09384, F&BI 208231 - Results of testing requested  
by Gerald Thompson for material submitted on August 16, 2012.

1 sample analyzed for Total Ag and Cr  
by Method 200.8 @ \$25 per sample (Cr already billed) \$ 25.00

1 sample analyzed for pH  
by Method 9040C @ \$25 per sample 25.00

Amount Due ..... \$ 50.00

FEDERAL TAX ID

(b) (6)